# Parking-Cruising Caused Congestion & Targeting Public Mitigation Investments

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Description:

Identifying the Problem

It is a common perception and concern among city mayors and transportation professionals that an enormous amount of time and fuel is wasted by motorists circling or “cruising” for free or underpriced on-street parking. As an example of such concern, over 70 city parking managers and senior transportation policy officials came to San Francisco in Sept. 2011 to address this topic at a Federal Highway Administration (FHWA/)National Association of City Transportation Officials jointly-sponsored, two-day Best Practices in Parking Management and Pricing Conference, which was led off by San Francisco Mayor Edwin Lee.

Despite such high interest, there is surprisingly almost no research on how drivers actually cruise for parking, which would be critical to understand in order to ascertain the magnitude of this problem. We do not know, for example, whether and/or with what frequency motorists: (1) follow a set pattern for choosing blocks to search; (2) pass up a legal space in hopes of finding another legal

space deemed preferable; (3) park in an illegal space even when a legal one may be availably nearby, and; (4) aggressively seek or pass up an open space on the opposite side of the street that they are driving requiring either crossing multiple same-direction travel lanes on a one-way road or making a U-turn on a two-way road.

Despite such lack of knowledge, multiple research studies on cruising have been undertaken, which are premised on assumptions about cruising behaviors, with measurements following such assumptions. The results of 16 studies of cruising for on-street parking in 11 cities were summarized in *The High Cost of Free Parking*(Shoup, 2005). The share of city traffic cruising in these studies ranged from 8% to 74%, and averaged 30%, with an average search time of 3.5 minutes to 13.9 minutes, or an "average of the averages" of 8.1 minutes. The accuracy of the results of these studies—conducted independently of each other and deploying different methodologies—is uncertain, but it does seem that circling is a real problem where it has been studied. Of course, studies of cruising are most likely to occur in areas where it is thought to be common, but remedies would be targeted to such areas too, so this bias as to the selection of study sites may not be problematic.

If cruising for parking could somehow be eliminated where it is thought to be a problem, its congestion-reducing benefits would likely be substantial. To eliminate such cruising in San Francisco, FHWA invested $19 million in the *SFpark* pilot project. This active parking pricing and management project (sometimes also referred to as performance parking) deployed electronic sensors and communications technologies to determine parking utilization rates at all times for on-street and public off-street parking. *SFpark* has been using such data to set and change parking prices to meet availability targets (typically aiming for around 20% of the number of spaces) and to offer real-time information about parking availability by specific location.[1]

Preliminary research results from three different studies of *SFpark* are showing that, regardless of the research methodology chosen to approximate how cruising actually occurs (using the same methodological assumptions both before and after performance parking deployment to determine relative changes), cruising appears to have declined by about 50%. (Heavy use and suspected abuse of handicapped parking placards which allow unlimited free parking have been identified as the biggest culprit to not realizing even greater declines.) An additional FHWA-directed study is nearing completion to estimate costs of deploying similar systems for other cities (which should be lower than San Francisco's costs, benefiting from lessons learned there).

Today, city and regional transportation professionals do not know if or where the problem may be of a sufficient magnitude to merit a costly solution. For a city or region to make a wise choice about investing in a performance parking system, or indeed any system to reduce congestion, it would need to understand both costs (which, as noted above, will be much better understood after completion of an FHWA-directed cost study) and benefits in absolute terms to make a comparative assessment of alternative congestion-reduction investment options. Cities cannot, though, reasonably estimate benefits until they are first able to quantify with some accuracy the amount of time wasted today by cruising, so that an absolute net benefit, and not just a relative improvement from deploying performance parking to reduce cruising, can be accurately modeled. Development of one or more tools is required to enable total levels of cruising within cities as a whole, and specific areas within them, to be ascertained.

Forging a Solution

A number of different tools and strategies could be developed or applied to measure actual cruising levels which would be responsive to this solicitation. Some approaches may be "standalone," meaning that they would only require the use of the single proposed approach or tool to determine cruising levels. Other solutions may need to work in concert with differently-sourced, already-available information in combination with the newly proposed tool or approach. As an example of the latter, a respondent could choose to propose a tool or approach to ascertain actual cruising levels that relies separately upon a city having or developing good parking occupancy data, which could be combined with whatever new tool or approach is developed under this solicitation. In support of this example, a few cities already do a reasonable job ascertaining parking occupancy data using, alone or in combination, parking sensors, payment data, and manual surveys. This solicitation is open to proposals that are either standalone or dependent upon other available information to discern total cruising levels.

Immediately below are a few ideas as to how one might respond to this solicitation. The discussion is provided only for illustrative purposes and should not be construed to suggest that, in the evaluation process, proposed approaches that are not raised here would be at a competitive disadvantage to approaches that are.

One strategy to learn more about the behavior of drivers searching for on-street parking when availability is constrained would entail first obtaining a very large GPS travel database. Using such a database, respondents could offer an approach to determine the prevalence and duration of circling for parking (because of its lack of availability), thus enabling its congestion-causing impacts to be measured.[2] While not required, it would be ideal if a respondent choosing this or a similar approach would be willing and able to contact drivers thought to have been cruising for a follow-up survey. This would enable a confirmation that what looked like circling for parking really was that—and not just someone who was lost—and also to ask related questions, such as how far away the driver had to park from his/her ultimate destination.

Another possible approach would be to test driver behavior in simulators. The street network for one or more areas of a city known for constrained and coveted on-street parking would, as envisioned, be used in the simulator, and drivers who regularly or occasionally drive and park on-street in the simulated areas would be recruited. Traffic conditions and available trade-offs (circling time versus cost for garage parking) should be presented in the simulator environment in as realistic a way as possible. For example, recruits, while rewarded for participation, would be sent home with less cash (but earlier) for electing in the simulator to circle for parking instead of to head to the nearest garage.

A third approach would be to scale up a technique that was tested in New York City, whereby video cameras were deployed to count the number cars that pass up an on-street parking space immediately after it becomes available to ascertain the percentage of traffic cruising.[3] This approach would need to be paired with another source of information or another approach to ascertain parking occupancy levels so that the total amount of cruising could be determined.

Regardless of the research approach that is proposed, it is critical that the applicant clearly identifies the source or sources of data to be used, the party or parties that control the data (if it is pre-existing) or whose permission would be required for the applicant itself to gather the data (e.g., the specific government entity that would need to approve the mounting of a camera in public space),

and the degree of risk–and the plan to mitigate such risk—that the plan to acquire existing or gather new data might fail. If a third party is required to gather or provide the needed data, the application should demonstrate, or at least describe, the interest and/or support from the third party (such as by including a letter of interest from such party as part of the submission).

**Expected Phase I Outcomes:**

The outcome expected from Phase 1 is a detailed concept that demonstrates the viability of one or more tools and/or systems to ascertain rates of cruising for free or underpriced on-street parking.

**Expected Phase II Outcomes:**

Phase II efforts would include demonstrating a working prototype tool and/or system (which may or may not include the manufacturing of a new product) that ascertains cruising rates in a city (with some, but not overwhelming, preference for San Francisco where the FHWA-funded *SFpark* program has been implemented) and/or area within a city that is thought to have constrained on-street parking that is leading to substantial cruising.

[1]Rather than better managing existing parking, some cities might instead choose to focus on providing more supply, but it is enormously expensive (sometimes exceeding $50,000 per space in urban parking structures) and its provision at a level sufficient to satisfy peak-of-the-peak demand at no price to the user is very detrimental to the goal of livable community design. Combining relatively low cost technologies with pricing incentives reduces the parking footprint by flattening peak demand, encouraging parking turnover, persuading drivers to use parking that is slightly further away from their destinations, and making transit and non-motorized access competitively more desirable.

[2]In the unlikely event that such data could be obtained retroactively for San Francisco, corresponding to a time period in calendar year 2013 or before when parking sensors were operational and thus occupancy was measured and recorded as part of the *SFpark* pilot, this would be beneficial as it would enable a direct comparison between measured parking occupancy levels and cruising.

[3]A driver passing up an open space would be thought not to have been cruising, while cruising is assumed for a motorist who takes the space. If, on average, one driver passes up an open space before the next driver takes it, then it would be estimated that half of drivers in that block at that time are cruising for parking.